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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,086	08/26/2003	Steven J. Keating	042390.P6134D	4927
7590 05/31/2005			EXAMINER	
Michael A. Bernadicou BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP Seventh Floor 12400 Wilshire Boulevard Los Angeles, CA 90025			OWENS, DOUGLAS W	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/649,086	KEATING ET AL.	
	Examiner	Art Unit	
	Douglas W. Owens	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2 and 4 – 8 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,197,668 to Gardner et al.

Regarding claims 1 and 2, Gardner et al. teach a microelectronic device (Figs. 1 – 2B, for example), comprising:

a semiconductor substrate (10); and

a dielectric layer comprising silicon oxynitride (Col. 3, lines 6 – 8; (30)).

The limitation of the nitridized hydroxyl-silicate layer is considered to be merely a reference to the composition. In such a case, the silicon oxynitride layer (nitridized hydroxyl-silicate layer) taught by Gardner et al. is essentially a hydroxyl-silicate layer that has been “nitridized” as it was formed.

Gardner et al. further teaches that the silicon oxynitride layer can be grown from the substrate (Col. 3, lines 6 – 10). Growing the layer from the substrate would have required nitridizing the hydroxyl-silicate layer as it was grown.

Regarding claim 4, Gardner et al. teach a microelectronic device, wherein the nitridized hydroxy-silicate layer has a typical thickness of about 4 Angstroms, which is less than approximately 7 Angstroms (Col. 3, lines 33 – 34; Col. 4, lines 5 – 7).

Regarding claim 5, Gardner et al. inherently teach a microelectronic device, wherein the substrate comprises a silicon wafer since a silicon wafer is required for the manufacture of microelectronic devices of this type.

Regarding claim 6, Gardner et al. teach a microelectronic device, further comprising a gate electrode (32) over the nitridized hydroxyl-silicate layer.

Regarding claim 7, Gardner et al. teach a microelectronic device, further comprising a pair of source/drain terminals (16A, 18A) disposed in the semiconductor substrate, substantially adjacent to the gate electrode.

Regarding claim 8, Gardner et al. teach a field effect transistor, comprising:

a gate electrode (32);

a pair of source/drain terminals (16A, 18A) disposed in a substrate, substantially adjacent the gate electrode; and

a gate dielectric (30) disposed between the gate electrode and the substrate, the gate dielectric comprising a nitridized hydroxyl-silicate layer (Col. 3, lines 6 – 10) having a typical thickness of about 4 Angstroms, which is less than approximately 7 Angstroms (Col. 3, lines 33 – 34; Col. 4, lines 5 – 7).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al. as applied to claims 1 and 2 above, and further in view of US Patent No. 6,013,582 to Ionov et al.

Gardner et al. do not teach a device, wherein the silicon oxynitride is a material in accordance with the expression  $\text{SiO}_x\text{N}_{(4-2x)/3}$  where  $0 \leq x \leq 2$ . Indeed, Gardner et al. is completely silent with respect to the precise composition of the silicon oxynitride material. Ionov et al. teach that silicon oxynitride typical has a composition of  $\text{SiO}_x\text{N}_y\text{H}_z$ , where x ranges from 0 to about 2, y ranges from 0 to 1 and z ranges from 0 to 1 (Col. 1, lines 55 – 58). If x were set at 1.5, for example, the expression  $(4-2x)/3$  would be 1, which lies within the range of y for a typical composition of silicon oxynitride. It would have been obvious to one of ordinary skill in the art to incorporate the typical silicon oxynitride composition taught by Ionov et al. into the device taught by Gardner et al., since it is desirable to select a composition of silicon oxynitride that is known to be a reliable insulator.

***Response to Arguments***

6. Applicant's arguments filed March 14, 2005 have been fully considered but they are not persuasive.

Applicant argues that the nitridized hydroxyl-silicate layer of the instant application has significant differences from the nitridized hydroxyl-silicate layer taught by Gardner et al. However, Applicant has not particularly and distinctly recited these significant differences in the claims. Gardner et al. teaches a nitridized hydroxyl-silicate layer that is grown from a substrate, which would have required "nitridizing" during the growth phase. Gardner et al. further teaches that the nitridized hydroxyl-silicate layer has a thickness on the same order as that of the claimed invention. Accordingly, the claimed invention appears to be identical to that of the invention disclosed by Gardner et al.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2811

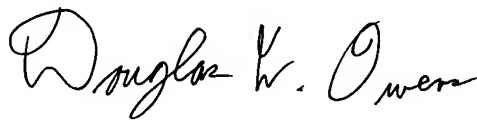
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas W Owens  
Examiner  
Art Unit 2811

DWO